

Proximity Inductive Sensors

Standard range, Nickel-Plated Brass Housing

Types ICB, M12

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- Sensing distance: 2 to 4 mm
- Flush and non-flush types
- Short and long body versions
- Rated operational voltage (U_b): 10 - 36 VDC
- Output: DC 200 mA, NPN or PNP
- Normally open, Normally closed
- LED indication for output ON
- Protection: reverse polarity, short circuit, transients
- Cable and M12 plug versions
- According to IEC 60947-5-2
- Higher resistance to magnetic field
- CSA certified for Hazardous Locations

Product Description

A family of inductive proximity switches in industrial standard nickel-plated brass housings. They are able to handle applications where

high sensing range is requested. Output is open collector NPN or PNP transistors.

Ordering Key

ICB12SF02NOM1

Type _____
Housing style _____
Housing material _____
Housing size _____
Housing length _____
Detection principle _____
Sensing distance _____
Output type _____
Output configuration _____
Connection _____

Type Selection

Conne- ction	Body style	Rated operating distance S_n	Ordering no. NPN Normally open	Ordering no. PNP Normally open	Ordering no. NPN Normally closed	Ordering no. PNP Normally closed
Cable	Short	2 mm ¹⁾	ICB 12 SF 02 NO	ICB 12 SF 02 PO	ICB 12 SF 02 NC	ICB 12 SF 02 PC
Cable	Short	4 mm ²⁾	ICB 12 SN 04 NO	ICB 12 SN 04 PO	ICB 12 SN 04 NC	ICB 12 SN 04 PC
Plug	Short	2 mm ¹⁾	ICB 12 SF 02 NOM1	ICB 12 SF 02 POM1	ICB 12 SF 02 NCM1	ICB 12 SF 02 PCM1
Plug	Short	4 mm ²⁾	ICB 12 SN 04 NOM1	ICB 12 SN 04 POM1	ICB 12 SN 04 NCM1	ICB 12 SN 04 PCM1
Cable	Long	2 mm ¹⁾	ICB 12 LF 02 NO	ICB 12 LF 02 PO	ICB 12 LF 02 NC	ICB 12 LF 02 PC
Cable	Long	4 mm ²⁾	ICB 12 LN 04 NO	ICB 12 LN 04 PO	ICB 12 LN 04 NC	ICB 12 LN 04 PC
Plug	Long	2 mm ¹⁾	ICB 12 LF 02 NOM1	ICB 12 LF 02 POM1	ICB 12 LF 02 NCM1	ICB 12 LF 02 PCM1
Plug	Long	4 mm ²⁾	ICB 12 LN 04 NOM1	ICB 12 LN 04 POM1	ICB 12 LN 04 NCM1	ICB 12 LN 04 PCM1

¹⁾ For flush mounting in metal

²⁾ For non-flush mounting in metal

Specifications

Rated operational voltage (U_b)	10 to 36 VDC (ripple incl.)	Indication for short circuit/ overload	LED blinking
Ripple	≤ 10%	Assured operating sensing distance (S_a)	$0 \leq S_a \leq 0.81 \times S_n$
Output current (I_o)	≤ 200 mA @ 50°C (≤ 150 mA @ 50-70°C)	Effective operating distance (S_r)	$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$
OFF-state current (I_i)	≤ 50 μA	Usable operating distance (S_u)	$0.9 \times S_r \leq S_u \leq 1.1 \times S_r$
No load supply current (I_o)	≤ 15 mA	Repeat accuracy (R)	≤ 10%
Voltage drop (U_d)	Max. 2.5 VDC @ 200 mA	Differential travel (H) (Hysteresis)	1 to 20% of sensing dist.
Protection	Reverse polarity, short-circuit, transients	Ambient temperature	Operating -25° to +70°C (-13° to +158°F) Storage -30° to +80°C (-22° to +176°F)
Voltage transient	1 kV/0.5 J	Shock and vibration	IEC 60947-5-2/7.4
Power ON delay (t_v)	300 ms	Housing material	Body Nickel-plated brass Front Grey thermoplastic polyester
Operating frequency (f)	≤ 2000 Hz		
Indication for output ON	Activated LED, yellow		
NO version	Target present		
NC version	Target not present		

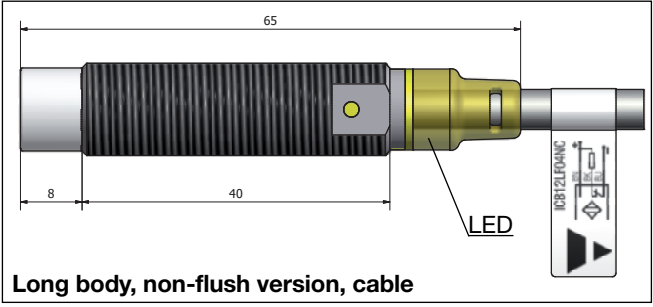
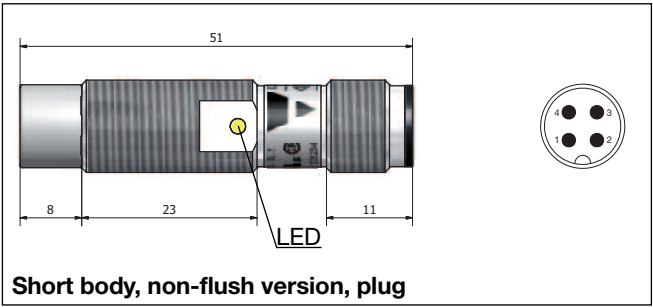
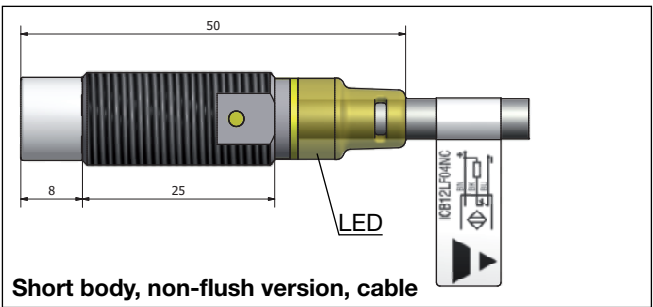
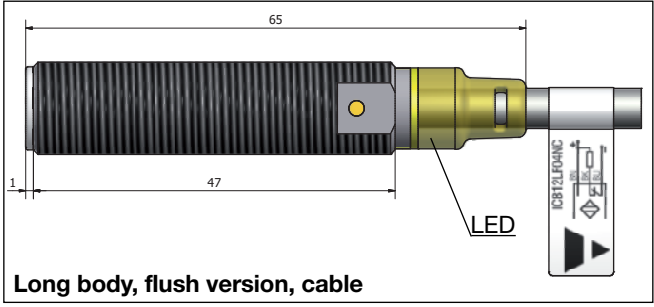
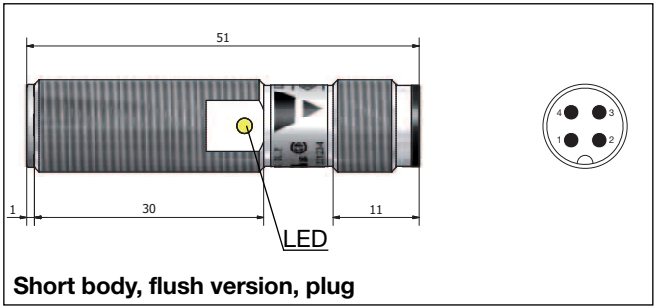
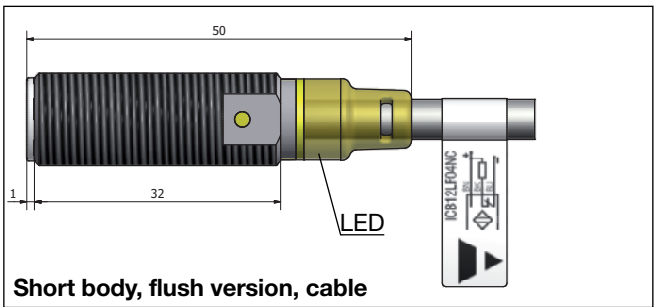


Specifications (cont.)

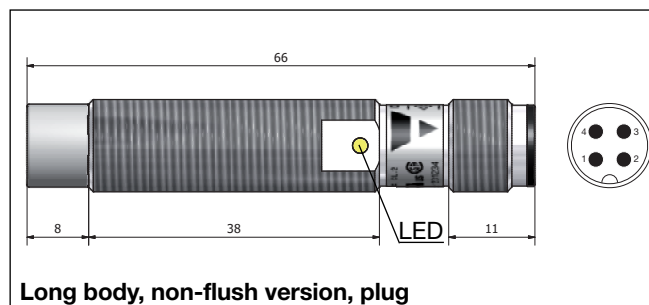
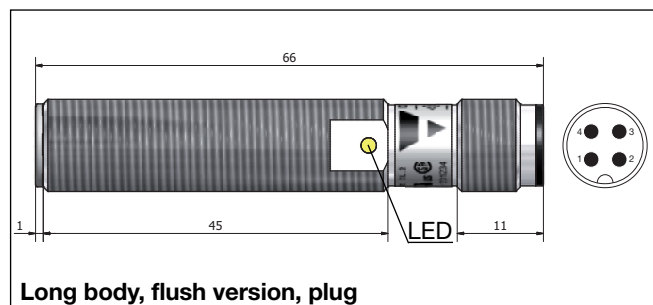
Connection	
Cable	2 m, 3 x 0.3 mm ² , grey PVC, oil proof M12 x 1
Plug	
Degree of protection	IP 67
Weight (cable/nuts included)	
Cable	Max. 120 g
Plug	Max. 30 g
Dimensions	See diagrams below
Tightening torque	
Distance from sensing face from 2 mm to 5 mm > 5 mm	4 Nm 10 Nm
Approvals	
UL (cRUus), CSA:	As Industrial Control Equipment - Proximity Switches. Types 1, 4, 4X or 12. Max ambient temperature 40°C.

Approvals (cont.)	
cCSAus	As Process Control Equipment for Hazardous Locations. - Class I, Division 2, Groups A, B, C and D. - Class I, Zone 1, AEx/Ex d IIB+H2, T5, Enclosure Type 4. Ambient temperature Ta: -25° to +60°C. Note: AEx for USA, Ex for Canada
CE-marking	Yes
EMC protection	According to IEC 60947-5-2
IEC 61000-4-2 (ESD)	8 KV air discharge, 4 KV contact discharge
IEC 61000-4-3	3 V/m
IEC 61000-4-4	2 kV
IEC 61000-4-6	3 V
IEC 61000-4-8	30 A/m

Dimensions

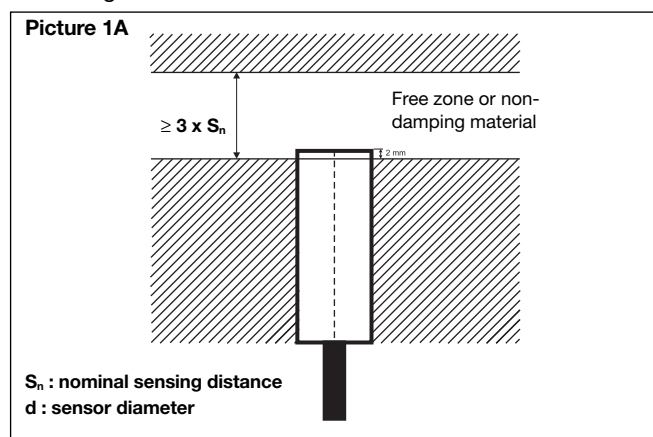


Dimensions (cont.)

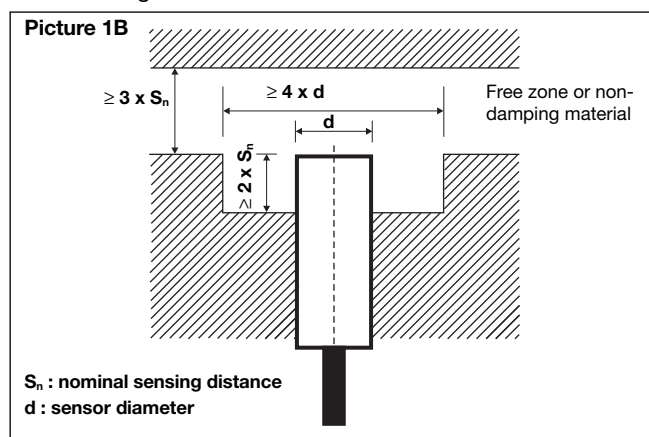


Installation

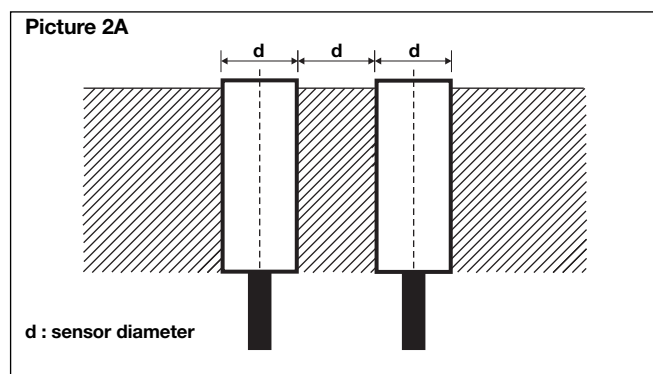
Flush sensor, when installed in damping material, must be according to Picture 1A.



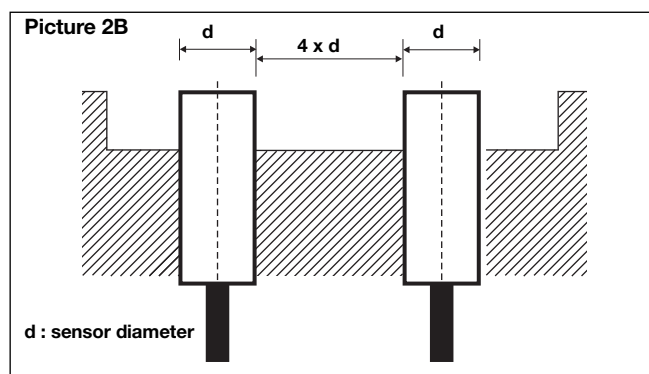
Non-flush sensor, when installed in damping material, must be according to Picture 1B.



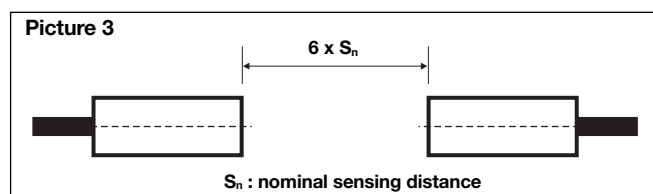
Flush sensors, when installed together in damping material, must be according to Picture 2A.



Non-flush sensors, when installed together in damping material, must be according to Picture 2B.

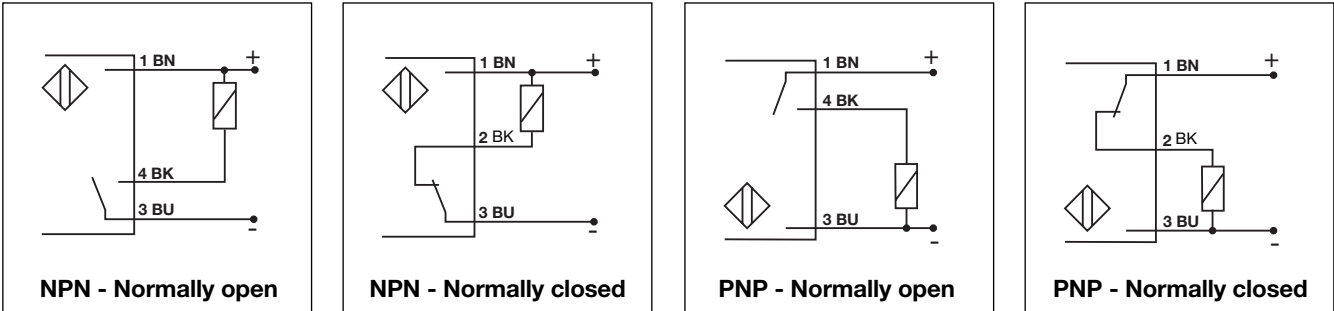


For sensors installed opposite each other, a minimum space of $6 \times S_n$ (the nominal sensing distance) must be observed (See Picture 3).





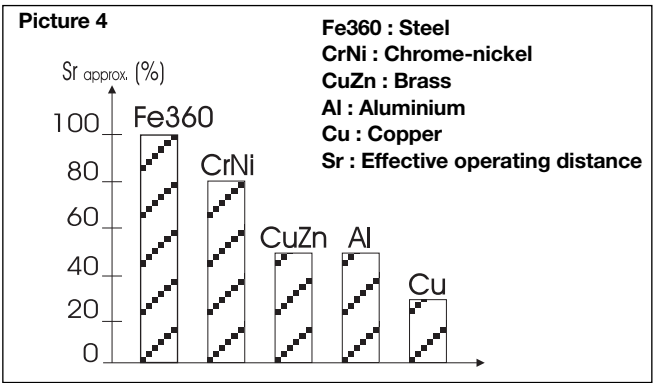
Wiring Diagrams



Reduction factors

The rated operating distance is reduced by the use of metals and alloys other than Fe360.

The most important reduction factors for inductive proximity sensors are shown in Picture 4.



Accessories for Plug Versions

3-wire angled connector, 2 m cable	CONM13NF-A2
3-wire angled connector, 5 m cable	CONM13NF-A5
3-wire angled connector, 10 m cable	CONM13NF-A10
3-wire stright connector, 2m cable	CONM13NF-S2
3-wire stright connector, 5m cable	CONM13NF-S5

For any additional information or different options, please refer to the "General Accessories" datasheets.

Delivery Contents

- Inductive proximity switch ICB.
- 2 nuts NPB
- Packaging: plastic bag